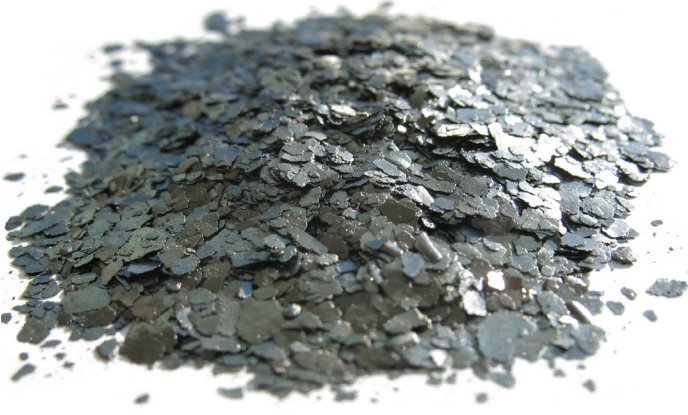


## CETCO® TC BOOSTER USED ON BLATCHFORD DESS ENERGY CENTRE #1 - EDMONTON MUNICIPAL AIRPORT GEOTHERMAL PROJECT



In May 2018, a drilling contractor started the installation of 570 (6" diameter x 500ft deep) geothermal boreholes in Edmonton, AB, Canada. The project at the former Edmonton Municipal Airport started with 2-rigs drilling in a formation of clay, silt, and coal seams. It increased to multiple rigs before the successful completion in October 2018. The grout development started prior to the first hole being drilled onsite.

### PROJECT DETAILS

BLATCHFORD DESS Energy Centre #1  
EDMONTON MUNICIPAL AIRPORT

### LOCATION

Edmonton, AB Canada

### PRODUCTS USED

CETCO® TC BOOSTER  
CETCO® GEOTHERMAL GROUT

### CHALLENGE

Associated Engineering specified the required thermal conductivity value maintain an average of 1.6 Btu/hr/ft/f. This proved a challenge to develop a mix that hit both the specification and was easy to pump in the field. A competitive brand for bentonite and graphite had already been field tested. CETCO's challenge by the drilling contractor was to:

Create a driller friendly mix that the contractors could mix and pump with ease. Maintain an average Thermal Conductivity (TC) level of 1.6 Btu/hr/ft/F.

This TC level is the highest specification that has been requested, of CETCO, in North America to date. Engineering firms are pleased that advances in geothermal grout and additives are allowing increased versatility in designing heat loop fields. CETCO expects to see more projects that require higher specifications regarding thermal conductivity.

### SOLUTION

CETCO TC BOOSTER and GEOTHERMAL GROUT were mixed in the field at a drill site located at Osgoode Hall in Toronto, ON, Canada. This was followed by some initial tests at the drilling contractors facility. The drillers on-site were very pleased with the

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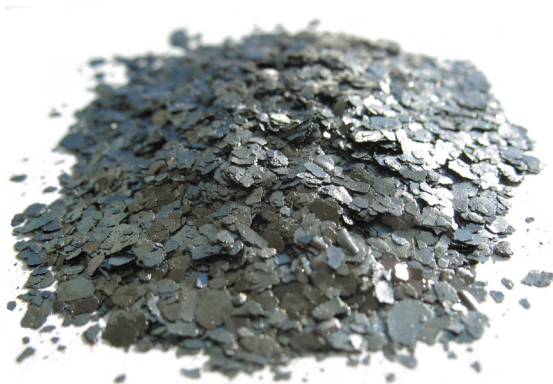
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FORM: CASE STUDY - BLATCHFORD DESS ENERGY CENTRE - EDMONTON MUNICIPAL AIRPORT



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pumpability of the product. In fact, they were surprised that a grout mix with a heavy loading of graphite could be pumped so easily.

The density and flake style morphology of CETCO TC BOOSTER produces an easier to pump grout than the driller had previously seen. The density of the flake also dramatically reduces the amount of dust that is produced when emptying the bag.

Thermal conductivity testing at an independent laboratory proved that the grout mix was able to meet the engineer's specification. At this point, the drilling contractor made the decision to use CETCO GEOTHERMAL GROUT and CETCO TC BOOSTER due to the ease of mixing and pumping. The driller friendly mixture allowed them to mix and pump the mixtures efficiently with reduced concerns of plugged tremie lines.

During the first week of drilling CETCO deployed Technical Sales Manager Mario Brunet and Laboratory Scientist Greg Plutko to the Edmonton jobsite. They provided real time testing on site and were able to troubleshoot any issues that arose. A problem was quickly determined based on a non-conventional grout plant that was being tested to increase speed and lower costs. The multi-batch experimental grout plant was causing excessive shear that was grinding down the CETCO TC BOOSTER into a fine powder. The mixing plant was reducing the effectiveness of the flake graphite. A traditional geothermal grout mixer was deployed and the TC values returned to the expected range.

Testing of random boreholes was conducted throughout the project. CETCO employees regularly visited the site to provide technical assistance, as well as train any new employees. CETCO also worked with its local distribution to ensure proper delivery of products and logistic support to the jobsite.

In October 2018, ahead of schedule, the loop-field was successfully completed to the project specifications. One key factor that contributed to this successful outcome was the ability to work with a grout that mixed easily and pumped to depth without any issues while maintaining the desired results.